CHAPTER 2
OPERATING INSTRUCTIONS

SECTION I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2.1 EQUIPMENT CONTROLS AND INDICATORS.

The following figures, as listed in Table 2-1, illustrate and describe the MILES 2000 Independent Target System (ITS) operating controls and indicators.

Table 2-1. Controls and Indicators Reference.

ITEM	FIGURE NO.
Detector Array	2-1
Kill Status Indicator (KSI)	2-2
Control Unit (CU)	2-3
Power Controller	2-4

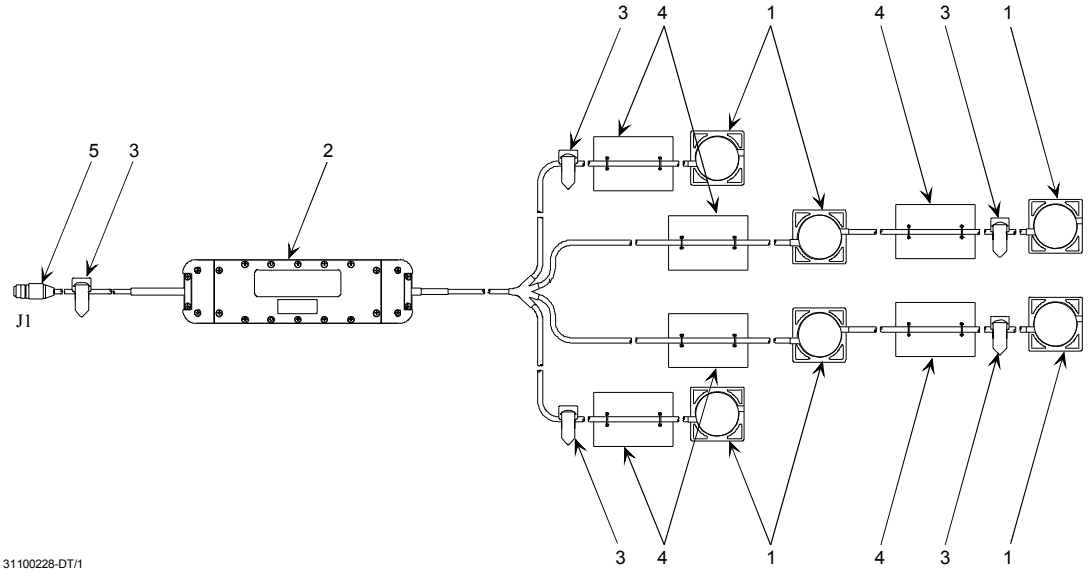


Figure 2-1. Detector Array.

1. DETECTORS. Detect laser transmissions that are being fired at the vehicle.
2. AMPLIFIER. Amplifies coded laser signals that simulate incoming fire and forwards them to the KSI.
3. FASTENER STRAPS. Used to secure detector array to the vehicle.
4. FASTENER PATCHES. Used to secure detector array to the vehicle.
5. CONNECTOR. System Cable connection.

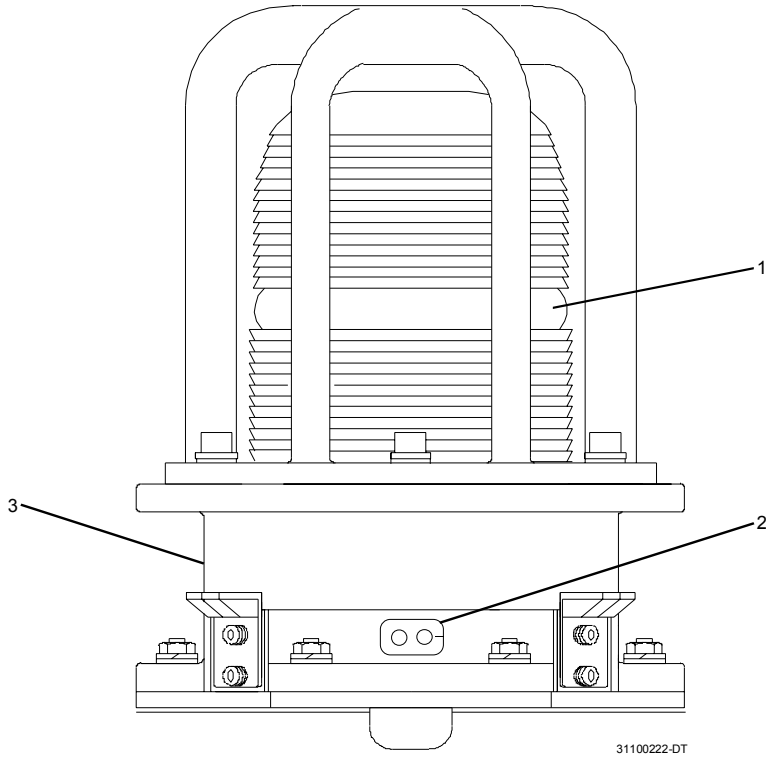


Figure 2-2. Kill Status Indicator (KSI).

1. VISUAL STROBE. Provides a 360E azimuth and 60E elevation optical output when a vehicle is hit (housed in an amber dome).

2. OPTICAL PORT. Bidirectional IR communications link used by CD/TDTD for uploading and downloading data.

3. CONNECTOR (not shown). System Cable connection.

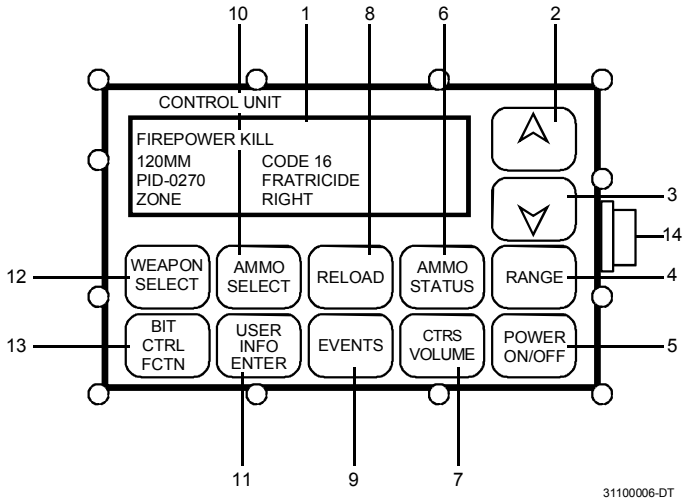


Figure 2-3. Control Unit (CU).

1. DISPLAY WINDOW. Displays events and system messages. (Example display shown.)

2. SCROLL UP PUSH BUTTON. Scrolls display up when pressed, and also moves the cursor.

3. SCROLL DOWN PUSH BUTTON. Scrolls display down when pressed, and also moves the cursor.

4. RANGE PUSH BUTTON. Allows the operator the option to input his estimate of target range.

5. POWER ON/OFF PUSH BUTTON. Enables/disables the MILES 2000 System.

6. AMMO STATUS PUSH BUTTON. Displays number of rounds remaining for selected weapon.

7. CTRS/VOLUME. CTRS allows user to adjust illumination of display. VOLUME allows user to adjust audio level to the vehicle headset.

8. RELOAD PUSH BUTTON. Causes the system to load any available selected remaining ammunition shown in the display window.

9. EVENTS PUSH BUTTON. Allows the operator to review the 16 most recent events on the display window. Holds up to 500 events.

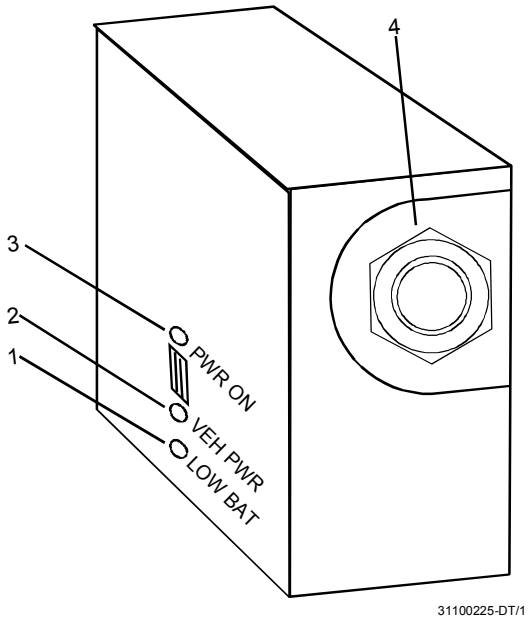
10. AMMO SELECT PUSH BUTTON. Allows the operator to view the different ammunition quantities and types available for a main gun or TOW.

11. USER INFO/ENTER PUSH BUTTON. USER INFO allows operator the ability to check his PID, Vehicle type, override the communications disable function under Communications/Catastrophic Kill conditions in an emergency, and to enable/disable a DIFCUE or MGSS. ENTER allows controller to enter commands selected in Control Mode.

12. WEAPON SELECT PUSH BUTTON. Allows the operator the option to select the desired weapon to be used.

13. BIT/CTRL FCTN PUSH BUTTON. BIT executes a system BIT with the results shown in the display window. CTRL FCTN allows controller to select vehicle platform type, blank or dry fire coax activation, and FlashWESS or ATWESS activation, etc.

14. CONNECTOR. System Cable connection.



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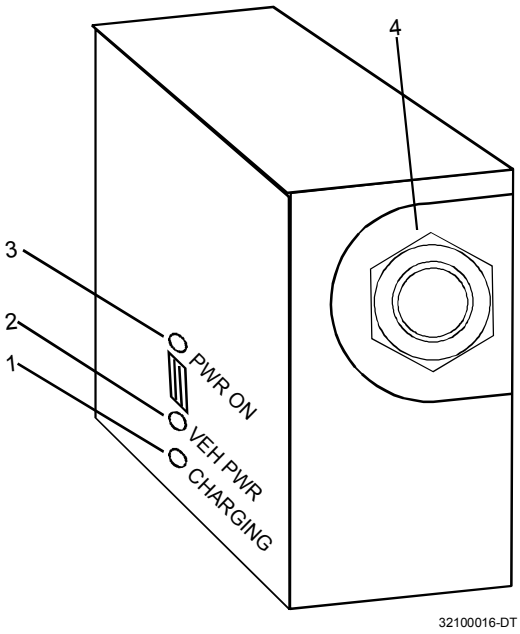

146409-2

Figure 2-4. Power Controller.

1. LOW BATT INDICATOR (146409-1). LED blinks continuously to indicate low internal battery power. Illuminates when battery voltage drops to 21 ±1 Vdc.

2. CHARGING INDICATOR (146409-2). Illuminates when battery voltage drops below 27.5 Vdc, and battery is charging.

3. VEHICLE POWER PRESENT INDICATOR. LED blinks continuously when vehicle power is at the CVS system, and the internal batteries are being trickle charged.

4. 10.5 VDC POWER PRESENT INDICATOR. LED blinks continuously when 10.5 Vdc power is ON.

5. CONNECTOR. System Cable connection.

SECTION II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Preventive Maintenance Checks and Services (PMCS) will ensure that the MILES 2000 equipment will be ready for operation and perform satisfactorily throughout its mission. Preventive maintenance checks consist of performing a systematic inspection to discover defects before they result in operational failure of the equipment. Defects or malfunctions discovered by the crew during use of the MILES 2000 equipment, or as a result of performing maintenance checks and services, will be reported using the proper forms.

2.2 INTRODUCTION TO PMCS TABLE.

Operator Preventive Maintenance Checks and Services are shown in Table 2-2. Tasks to be performed before operation appear in the "B" column under the heading "Interval." Tasks to be performed during operation are checked in the "D" column. Tasks to be performed after operation are checked in the "A" column. Tasks to be performed weekly are checked in the "W" column, with tasks to be performed monthly checked in the "M" column. If no check marks are in the monthly or weekly column, perform PMCS procedures daily.

NOTE

Within designated interval, these checks are to be performed in the order listed.

B - Before Operation
D - During Operation
A - After Operation
W - Weekly
M - Monthly

Table 2-2. Operator Preventive Maintenance Checks and Services.

ITEM NO.	ITEM TO BE INSPECTED	INTERVAL B	D	A	W	M	PROCEDURES CHECK FOR AND HAVE REPAIRED	EQUIPMENT IS NOT READY/AVAILABLE IF:
1.	Power Controller	✓		✓			Inspect for damaged connectors.	Broken connectors. Bent, broken or missing pins.
		✓		✓			Inspect for acid leaks.	Acid is present.
2.	Vehicle Detector Array	✓		✓			Wipe all detectors clean and check for damage. Inspect array cables and connector for damage that would prevent normal operation.	Detectors broken; array cables damaged; broken connector, bent, broken or missing pins. Amplifier broken.
3.	Kill Status Indicator (KSI)	✓		✓			Inspect for cracks in plastic lens (amber dome of visual strobe).	Amber dome plastic lens cracked.
		✓		✓			Check for optical port damage.	Lens broken, cracked, or missing.
4.	Control Unit (CU)	✓		✓			Inspect for cracks in display window and membrane switches.	Display window or membrane switch broken.
		✓	✓				Inspect for broken or bare wires.	No display in display window when powered on.
5.	Cable and Connector Assemblies	✓		✓			Inspect for broken or bare wires.	Broken or bare wires are present.
		✓		✓			Inspect connectors for damage or broken pins.	Broken connectors. Bent or missing pins.

SECTION III. OPERATION UNDER USUAL CONDITIONS

2.3 ASSEMBLY AND PREPARATION FOR USE.

MILES 2000 equipment must be inspected and prepared as described in the following paragraphs prior to use.

NOTE

When applying fastener tape, always apply the "hook" type tape to the holding surface (the surface to which an item will be installed) and the "pile" type tape to the item being installed.

NOTE

Installation instructions for the Direct/Indirect Fire Cue (DIFCUE) are contained in TD 9-6920-893-10; installation instructions for the Main Gun Signature Simulator (MGSS) are contained in TD 9-6920-892-10.

2.3.1 Fastener Tape.

2.3.1.1 Fastener Tape Application and Preparation. Much of the MILES 2000 equipment is mounted with fastener tape. If fastener tape is not affixed to the vehicle already, or if existing tape is worn and unserviceable, remove any existing tape and use the following directions to apply/reapply the fastener tape:

a. Clean all areas where fastener tape is to be installed with water, a brush (if necessary), and rags. Tape will not adhere to a dirty, wet, or oily surface.

b. Mark areas where fastener tape is to be applied; cut fastener tape to the appropriate lengths.

WARNING

Tape primer is toxic and highly flammable. Do not spray near heat, open flame, or sparks. Use primer only in well ventilated areas. Do not permit smoking in the area. Injury to personnel may result.

c. Spray a heavy coat of tape primer on the cleaned areas along the strip where the fastener tape will be applied. Allow primer to dry thoroughly before applying the fastener tape. (Follow the directions on the primer can.) (See Figure 2-5.)

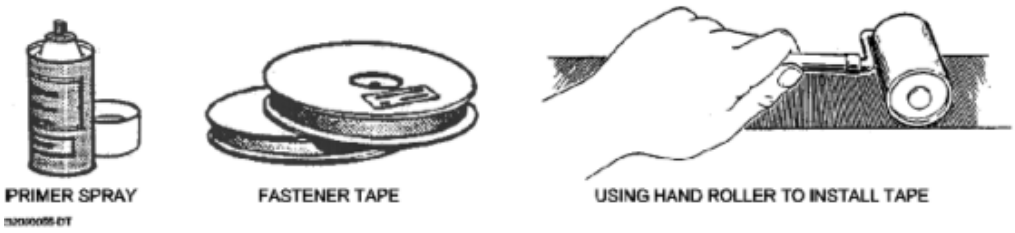

Figure 2-5. Fastener Tape Preparation

NOTE

The fastener tape has a protective backing. When applying short lengths of tape, remove all the backing before installing the tape. When applying longer lengths, remove the backing gradually as you apply the tape. This will help keep the tape adhesive from sticking to itself or to the wrong surface.

The quadrants of the vehicle-left, right, front and rear are determined from the driver's viewpoint, which would be as if facing towards the front of the vehicle. All installation instructions are given from this viewpoint, even though at times the installer may be facing to the rear of the vehicle.

NOTE

MILES equipment installation procedures should be followed as outlined in the technical manual. If the following procedures CANNOT be followed due to cable length, vehicle not listed, or additional vehicle equipment, then place the MILES equipment in the best and safest location.

2.3.2 Installation of MILES 2000 Equipment on ITS Vehicles.

NOTE

For all Detector Array installations, roll up extra cable between detectors and secure with fastener tape tie-wraps.

2.3.2.1 M977 HEMTT. (See Figure 2-6.) See Figure 1-2 for Independent Target System (ITS) components.

2.3.2.1.1 Detector Array.

WARNING

Never touch the vehicle exhaust equipment when installing or removing MILES 2000 equipment. The exhaust can be very hot and cause severe burns.

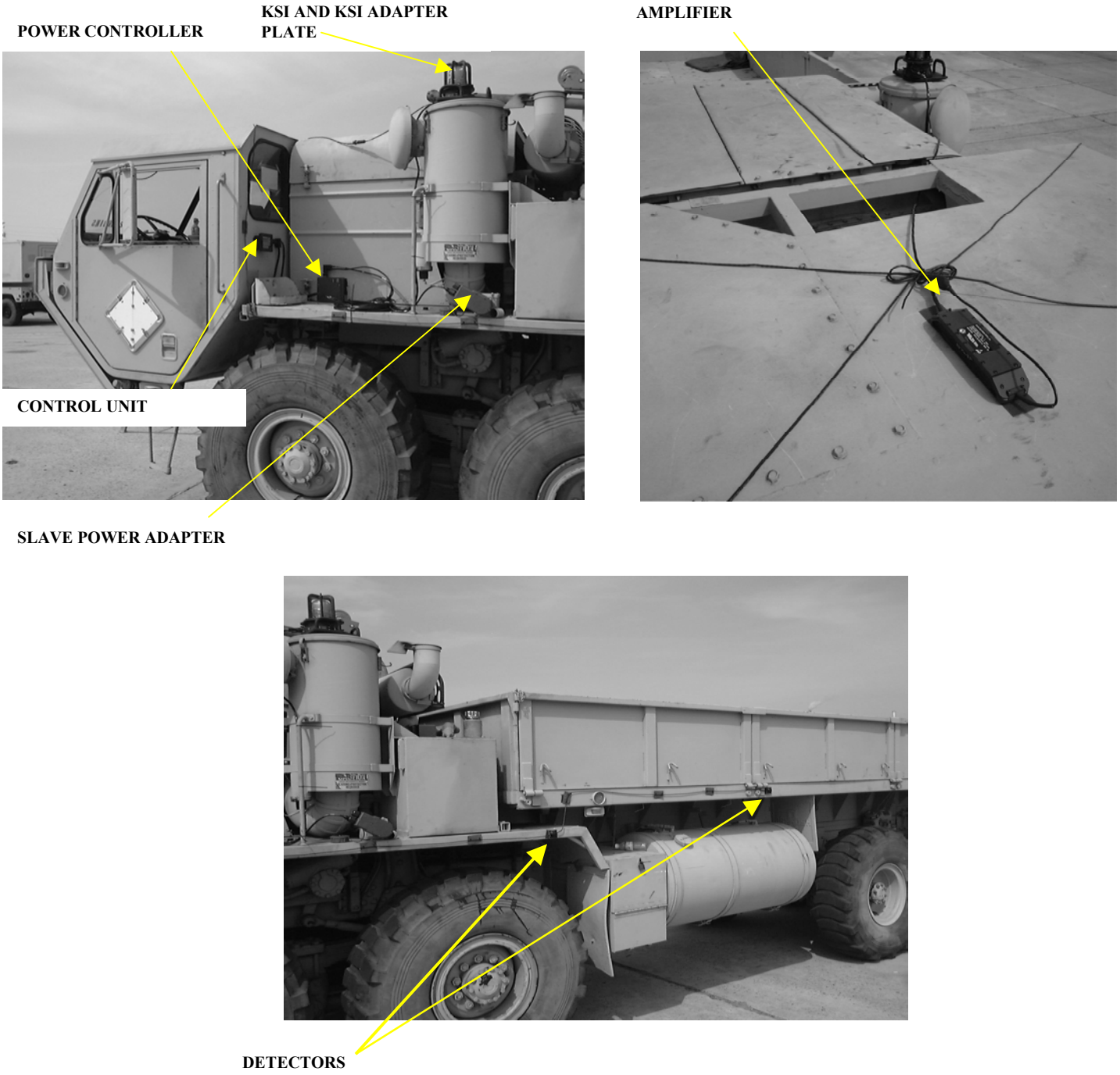

Figure 2-6. M977 HEMTT MILES Installation (Sheet 1 of 2).

Figure 2-6. M977 HEMTT MILES Installation (Sheet 2 of 2).

CAUTION

Do not let MILES 2000 cables touch the vehicle exhaust or heating equipment.
Heat can cause damage to cables and/or malfunction of the equipment.

ITS vehicle configurations are varied, so there is no specific way to install the Detector Array on a vehicle. When installing the Detector Array, follow the guidelines below:

a. Remove Detector Array from the transit case, and inspect cable segments and detectors for damage.

b. Wipe all detectors clean and inspect connectors for dirt and/or damage.

c. Replace and report damaged equipment, as required.

d. When routing array segment, whenever possible, there should be detectors installed on the right and left sides, as well as on the front and rear. However, this is an ideal layout that should only be used if placement can be accomplished without interfering with normal vehicle operations or presenting a safety hazard. In some cases, the cabling may not be long enough to put detectors on all four sides.

e. Secure all array segments with fastener tape tie-wraps at frequent intervals. Extra cable between detectors should be rolled and secured to the vehicle.

2.3.2.1.2 Kill Status Indicator (KSI). (See Figure 1-2 for KSI mounting adapter plates.)

a. Remove the KSI and mounting plate from the transit case and inspect the KSI for damage.

b. Inspect strobe assembly of the KSI for cracks. Inspect connector for dirt and/or damage.

c. Replace and report damaged equipment, as required.

d. Apply primer and fastener tape to the bottom of the mounting plate, and to the bottom of the KSI, if needed. (Refer to paragraph 2.3.1.1 for fastener tape application.)

e. Apply primer and fastener tape to the top of the air cleaner.

NOTE

For the following step, make sure that the KSI and the mast assembly are lined up as described before placing them together, as the fastener tape will make it difficult to separate the units to realign them.

f. Attach the mounting plate to the vehicle and ensure the KSI and mounting plate are securely mounted.

2.3.2.1.3 Control Unit (CU).

a. Remove the CU from the transit case and inspect for damage.

b. Inspect connector for dirt and/or damage.

c. Replace and report damaged equipment, as required.

d. Apply primer and fastener tape to the bottom of the CU, if needed. (Refer to paragraph 2.3.1.1 for fastener tape application.)

e. Apply primer and fastener tape to the outside wall of the vehicle cab behind the driver as shown in Figure 2-6 (Sheet 1 of 2).

f. Mount the CU to the outside wall of the vehicle cab and ensure it is firmly seated.

2.3.2.1.4 Power Controller.

a. Remove the Power Controller from the transit case and inspect for damage.

b. Inspect connector for dirt and/or damage.

c. Replace and report damaged equipment, as required.

d. Apply primer and two (2) strips of fastener tape to the bottom of the unit if needed. (Refer to paragraph 2.3.1.1 for fastener tape application.)

e. Apply primer and fastener tape on the outside wall of the vehicle cab behind the driver as shown in Figure 2-6 (Sheet 1 of 2).

f. Mount the Power Controller to the outside wall of the vehicle cab, and ensure it is firmly seated.

2.3.2.1.5 System Cable.

NOTE

Route the cables and connect them to the individual units. Secure the cables safely out of the way using fastener tape tie-wraps at intervals.

Letter/number designators are shown in parenthesis. For example: (P3) or (J1). The designators have been added to clarify connector identifications. Each system cable segment is labeled with its unique designator.

Cable segments are labeled with "P" (plug) and "J" (jack) designators as shown in the following example: "P1/J2," where P1 indicates that the connector of that cable segment is plug #1, and J2 indicates the routing destination, jack #2, of the equipment/cable to which the cable segment is being routed. The installation instructions of this manual identify the equipment/cable to which each cable segment is to be routed.

a. Remove the system cable from the transit case. Inspect the entire length of the cable, making sure there are no bare wires exposed and the cable has not been damaged in any way.

b. Inspect connectors for dirt and/or damage.

c. Replace and report damaged equipment, as required.

d. Route segment (P3-green sleeve) to the KSI, and connect (P3) to (J1) of the KSI.

e. Route segment (P4-gray sleeve) to the Detector Array, and connect (P4) to (J1) of the Detector Array.

f. Route segment (P2-red sleeve) to the CU, and connect (P2) to (J1) of the CU.

g. Route segment (P1-violet sleeve) to the Power Controller, and connect (P1) to (J1) of the Power Controller.

h. Route segment (P5) to the vehicle power slave receptacle, and connect (P5) to the slave receptacle connector.

i. Secure all cables out of the way with fastener tape or fastener tape tie-wraps.